FY 1982 NOAA AUTHORIZATION

HEARING

BEFORE THE

SUBCOMMITTEE ON NATURAL RESOURCES, AGRICULTURE RESEARCH AND ENVIRONMENT

OF THE

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THURSDAY, MARCH 12, 1981

HOUSE OF REPRESENTATIVES,
COMMITTEE ON SCIENCE AND TECHNOLOGY,
SUBCOMMITTEE ON NATURAL RESOURCES,
AGRICULTURE RESEARCH, AND ENVIRONMENT,
Washington, D.C.

The subcommittee met, pursuant to notice, at 8 a.m., in room 2325 of the Rayburn House Office Building, Hon. James H. Scheuer (chairman of the subcommittee) presiding.

Mr. SCHEUER. The subcommittee will come to order.

Today, we begin a series of authorization hearings by the Subcommittee on Natural Resources, Agriculture Research, and Environment on the National Oceanic and Atmospheric Administration.

It is our intent to examine in a comprehensive manner the operations and research associated with NOAA's atmospheric, climate, and ocean pollution program during the course of these hearings. Included are a broad range of activities including National Weather Service, Environmental Data and Information Service, weather satellites, weather modification research, acid rain research, Great Lakes research, climate activities, and ocean pollution research and monitoring.

Many of these activities of NOAA provide both fundamental knowledge and data bearing on the most important problems we face in the area of resource management and environmental protection. NOAA research and activities provide weather and climate information which is used worldwide, and information which is essential to the proper management of fish stocks and oceanic resources.

It is the aim of the subcommittee to insure that the most essential of these activities are continued.

Today's hearing will focus on the Reagan fiscal year 1982 budget request for NOAA. Representing NOAA is Dr. James P. Walsh, Acting Administrator of NOAA.

Since NOAA's Administrator will probably not be confirmed by the Senate for several weeks, we will examine NOAA's 1982 budget request today and next week, and then defer questions on the policy decisions underlining these budget figures until the new Administrator for NOAA is finally appointed.

Mrs. Schneider.

Mrs. SCHNEIDER. Thank you, Mr. Chairman.

Our colleague, Bill Carney, who usually sits in this seat, unfortunately cannot be with us. He is at the White House this morning, so it is with great honor I am sitting in as ranking minority member. He asked me to communicate his regrets that he could not be here, and that he is deeply interested in the work of NOAA.

As a member of this committee, I am finding the budget process a unique experience. Today we will be hearing from NOAA. They will be presenting to us the Reagan administration's budget for the coming year.

What is interesting to note is that the NOAA budget of $498 million represents an increase of $47 million and the Reagan proposal is $144 million less than the Carter proposal.

I have learned, while sitting on this committee, that we have a very special relationship with the agencies under our jurisdiction and today, as we examine the budget request, we have to maintain an adversarial role. No budget is ever perfect as submitted, and we will be looking for the very best allocation of the taxpayer's dollar. That may mean our priorities could be somewhat different from those of NOAA. But just for today we shall maintain an adversarial role in our dealings with the Agency.

In a few short weeks we will be marking up an authorization bill, and we will become the advocates for NOAA's programs contained within.

The heart of the scientific process is peer review, and we, too, must go through several years of peer review as this legislation moves foward.

The budget acts, as we all know, will trim everyone's favorite programs. When this subcommittee reports our authorization bills, we will be asked by our peers if we have taken cuts in programs we advocate just as we will ask them how their programs have fared.

Of course, we must all face the ultimate peer review next year when the voters will grade our performance.

I must say I have already taken a close look at the budget numbers for activities under our jurisdiction and they seem reasonable. As a matter of fact, I think you folks have fared better than many Federal agencies that have come before the committee. There are a number of essential, public services contained in the budget, and we owe a duty to the public to insure they are continued.

There are also several areas where I must question the priorities established by the Agency or perhaps by the OMB, and I will be listening closely to testimony today to see how these choices are justified.

Finally, I expect we will be be joined later by Congressman Winn, the ranking minority member of the Committee on Science and Technology and a member of this subcommittee. He has a deep and continuing interest in the Consolidated Storm Information System, which is a joint NOAA and NASA undertaking.

Thank you, very much, Mr. Chairman.

Mr. SCHEUER. Thank you, my respected colleague.

Congressman George Brown, our very distinguished member of the subcommittee and former chairman of the SRT Subcommittee of the Science Committee, and perhaps one of the most knowledgeable and able members of the Science Committee and in the area we are covering this morning.

Mr. BROWN. Thank you, Mr. Chairman. I have no comments.

Mr. SCHEUER. All right.

Then, Mr. Walsh, we will ask you to proceed with your statement. I am sure we will have questions for you when you are finished.

Mr. WALSH. Thank you, Mr. Chairman.

STATEMENT OF JAMES P. WALSH, ACTING ADMINISTRATOR, NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

Mr. WALSH. Mrs. Schneider, Mr. Brown, it is a pleasure to be here before you this morning to discuss NOAA's science and services activities over which your subcommittee exercises jurisdiction.

Before I get farther into my testimony, let me introduce the two gentlemen at the table with me.

First of all, on my left, is Dick Hallgen, who is our Acting Assistant Administrator for Oceanic and Atmospheric Services and head of the National Weather Service.

On my right, is Dr. Ferris Webster, Assistant Administrator for Research and Development.

Also, in the audience prepared to answer questions, is the gentleman that appeared before you not long ago, Martin Belsky, Assistant Administrator for Policy and Planning.

What I would like to do this morning, if I may, is briefly review for you NOAA's overall mission, our position, and our budget. Then, after showing you how our science and services programs fit into these areas, I would like to discuss in detail those science and services programs which you have interest in.

I have today divided the latter part of my testimony into subject areas involving nine major science and services elements within our Agency: Weather observation and prediction; weather modification; air quality, climate; marine observation and prediction; marine pollution assessment; solar terrestrial research and services; marine resources research and development, and hydrology.

First of all, as you know, as part of the Department of Commerce, we are responsible for managing and conserving certain selected oceanic, coastal, and atmospheric resources, and for expertise to providing environmental expertise and essential scientific information.

Our missions, I might mention, are derived from over 100 separate statutory authorities.

Our operations are geographically diversified. They require ships, satellites, aircraft, buoys, as well as modern, complex computer communications systems, to provide our quality service to the Nation.

NOAA was established by the Department of Commerce organizational plan No. 4 in 1970, but our tradition reaches back to entities such as the Coast and Geodetic Survey, Weather Bureau, which go back about 150 years.

Let me, if I may, step to the chart, Mr. Chairman, and briefly go over our major line components within NOAA, each of which is headed by Assistant Administrators.

The purpose for showing this chart is to give you a sense, because of our new chairman of the subcommittee, of understanding

the entity we call NOAA, which many people refer to as nothing more than a large holding company brought together by its oceanic and atmospheric science interests.

First of all, let me start by explaining the headquarters under it very briefly. The Administrator, Deputy Administrators, and Associate Administrators are all executive level, and are all Presidential appointments by advice and consent of the Senate.

As you can see, we have our own service offices; Congressional Affairs, Public Affairs that service the Administrator, the General Counsel's office and Assistant Administrator for Policy and Planning.

NOAA, as a unit, is relatively self-contained in the Department, and we provide most of our staff services, with some exceptions—such as the procurement area—in the Washington, D.C. environment. We also have a new office—Ocean Minerals and Energy—which we are proposing but has yet to be established. This is the result of recent legislation authorizing NOAA to regulate and encourage development of mining and ocean thermal energy systems.

Let me turn to the nine components within NOAA and explain their missions.

First of all, the Assistant Administrator for Fisheries, also head of the National Marine Fisheries Service overseas, an organization with the principal role of managing and conserving fish resources within our 200-mile limit and protecting vital habitats for living marine resources, including whales, marine mammals, and endangered species such as turtles. One of the jobs here is to assist in the development of the U.S. fishing industry.

In addition to this organization, which not too long ago was primarily science and service, NOAA still has a major research component, but as you can see, because of the advent of the 200-mile limit, this part of NOAA has begun to evolve on the part of management. We still consider it to be an essential part of good management.

The budget: I might just mention the budgets, as they change from 1981 to 1982. In 1981 the National Marine Service had a full-time employment of 1,700 people and a budget of $139 million. Under the Reagan proposal, employment will increase to 1,710, actually an increase of 14 full-time people in terms of the budget, and funding will decrease to $124 million.

There are, in the Reagan budget, reductions proposed in the National Marine Fisheries Service related to grants to States, and such things as anadromous fish and fish development and reductions in aquaculture, and so forth.

The next entity was recently created. The coastal zoning management program was created in 1972, instituted in about 1972 and 1974, and it has the responsibility of establishing general policies for use and protection of coastal areas and of providing assistance to coastal States in developing management programs in the coastal environment. The program has provided assistance to States, first developed programs, and then administered them over the last several years.

In addition, this office provides protection to the establishment of estuarine and marine sancturaries, and has sought recent office ad-

dition to try to harmonize Federal decisions which affect ocean uses.

In addition, there has been a large coastal energy impact that runs anywhere from $50 to $70 million a year in this entity.

The principal coastal zoning management program, however, proposed for elimination by the Reagan administration budget, and both the Carter administration budget and Reagan administration budget also recommend the cessation of the coastal energy impact program. So, what would remain if the budget is accepted, would be the sanctuary program and coordination responsibility as well as some activities under the coastal management program, relating to the constituency.

The proposed budget goes from about $50 million in our request for 1981 to $8.9 million in 1982. As you can see, it is a sizable reduction.

Let me go over here next to the Assistant Administrator for Oceanic and Atmospheric Services, and this is the bulk of our agency, and the service column from it, and it contains the National Weather Service, which, of course, is the largest component with 5,000 employees; Natural Ocean Survey, Environmental Data and Information Service, and Ocean Technology and the Energy Sevices unit.

This entity the committee is quite familar with. The reporting is a forecasting of weather—severe weather, hurricanes and tornadoes—and we manage, of course, a fleet of ships that are engaged in ocean research, hydrography, and fishery research out of this operation. The National Ocean Survey is also responsible for a geodetic network in the United States as well as preparing and issuing nautical charts and the aeronautical charts for the United States.

After the Environmental Data and Information Services, probably the largest environmental data storage system in the world, managed by one unit, and containing a substantial amount of data related to climate and other activities, the Ocean Technology and Engineering Services is an entity that provides engineering services to NOAA, as well as operating our data program.

Here you will see there is an increase in the budget, although there is a decrease in personnel in 1982.

The Office of Research and Development is the principal entity for conducting budgetary research, although there is much conducted in these entities as well as others, which are mutually subject to being spread out through all units.

The Assistant Administrator for Research and Development is in charge of actually four major programs. One is not seen here, which is special research programs, but one program is the sea grant program, which was created in 1965, which provides assistance to local States to do research on particular problems affecting that State.

As you can note, this program also has been recommended to be ended by the Reagan administration.

Next, we have a series of laboratories, environmental research laboratories which do research on Great Lakes problems, on oceanic problems, and atmospheric problems, and we will get into that more later.

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The Office of Marine Pollution Assessment, a new office. We have attempted to consolidate our marine pollution capability to focus on practical problems and also provide research into various questions facing the United States with regard to marine pollution.

Here, you will see a sizable change in the amount of money going into this program in 1982, as a result of the recommendation to end sea grants. The remaining funds largely will be going to environmental research laboratories and to marine pollution assessment.

The next is the Assistant Administrator, Satellites Operations, National Earth Satellite Service, and the principal responsibility is to operate our meteorological satellites, which are integrally related to weather forecasting and, in addition, this unit was spun off with the expectation that we would have new responsibilities for the National Ocean Satellite System, which was being developed on a joint basis with the Navy and NASA.

As you know, the National Ocean Satellite System has been proposed for deferment and will not be funded. In addition, it will handle the land satellite system and that has been reduced in funding, however, the responsibility for planning for transfer of the land satellite system to NOAA and to the private sector remains with us and we are currently developing policies related to that.

That gives you a very quick overview of the agency by the use of this chart, and then I have a couple of comments generally on the budget changes.

We have the general responsibility to coordinate certain science programs for the Federal Government relating to oceans and atmosphere.

Most of these activities operate under the umbrella of the Federal Coordinating Council for Science, Engineering and Technology, which is part of the Office of the President's Science Adviser. The NOAA Administrator, for example, serves as chairman of the Committee on Atmosphere and Oceans, and that activity has sponsored a number of efforts to coordinate things between Federal agencies, for example, ocean engineering, solar terrestrial physics, military atmosphere research. NOAA has planned long-range plans for weather modification research and aquaculture and the NOAA council is also reviewing coordination and better utilization of the entire Federal fleet of oceanographic vessels.

In addition, there is a separate entity which NOAA is in charge of and that is Federal coordinator for meteorological services and supporting research. We chair that and work closely with the other Government weather services, in particular those of the Navy and the Air Force, in order to avoid duplication and maximize our investments.

We also have the responsibility for developing 5-year plans for climate and for marine pollution. Both of the offices that are responsible for this coordination are located within the Office of Policy and Planning. However, other officials in NOAA are responsible for assisting in this. For example, I am chairman of the Interagency Committee for Marine Pollution, and our Associate Administrator has been working on the climate area.

Let me now just quickly go over the budget situation and talk about its implications.

The 1982 budget request for NOAA is proposing $800 million in budget authority to fund our existing, ongoing program activities, with some limited program expansions. The overall 1982 request requests a 4.4-percent decrease from the amount available to NOAA in 1981 and 23.9-percent decrease from the amount requested by President Carter in January. I will just briefly mention a couple of items that are contained in my prepared testimony which gives you some idea of the "puts" and "takes" in our budget.

The major reductions are the land satellite program, a $16 million reduction in 1982, and $6 million reduction in 1981.

Termination of the coastal energy impact program and resituation of $40 million of funds, and termination of the coastal zoning management program is $37 million; and the 308 program and the formula grant program is $7 million.

Termination of the sea grant program is minus $37 million. Reduced funding for fishery grants is $10 million. Reduced funding for various fishery programs including State and anadromous fisheries, fishery trade enhancement, $1 million; and aquaculture, $2 million.

We are proposing to deactivate three ships from the fleet.

We are also proposing, in order to achieve mandated personnel savings, to close 38 part-time weather service offices and converting 8 weather service forecast offices to reduced status.

We are eliminating new funding for our undersea research program and proposing to not fund certain intergovernmental climate activities that were recommended by the Carter administration, and we are reducing funding for expansion of climate data base.

Finally, we are rescinding funds that were earmarked for an education center at our Sand Point western region headquarters, that is presently under construction in Seattle, and which we hope to begin to occupy later this year or early next year.

However, there are some increases, and let me mention those as well.

We are adding $7 million to our funding for our atmospheric system.

We are proceeding with development of the next generation of weather radar and we are seeking to continue procurement and installation of automated surface observations, high priority items for the National Weather Service.

We are augmenting our efforts to rehabilitate our older ships and we are providing additional funds to develop some user climatological data base, and we are asking for more funds to assist us in fishery management plans.

We are asking for $1.9 million to begin a new 10-year effort in an acid rain research, to expand our weather modification research through studies of ice crystal formation and distribution, and we are beginning the procurement of two new computer systems, one a new computer system for our environmental research labs, and to continue the effort to procure a new computer system for our central computing system that provides the basic support for our weather forecasting and satellite weather observation activities.

Our personnel limits were originally proposed for the end of this year at 12,700, and it is now to be brought down to 12,247 for 1981, and then down to 11,930 for 1982. These represent 3.6- and 6.1-per-

cent decreases specifically. These personnel reductions will be achieved through a combination of attrition, reassignments, voluntary retirements, and where necessary, reductions in force. Personnel reductions will occur in all major program areas. We tried to spread the responsibility for reductions fairly across our agency, but there will be a higher proportion occurring in headquarters and overhead activities.

If I may, Mr. Chairman, let me turn to certain selected sciences' and services' goals and activities.

We, as I noted, conducted research and development in all major program areas, including program areas over which, of course, this subcommittee does not have jurisdiction. As reported in the special analysis of the Federal budget on Federal research and development, NOAA's total R. & D. budget for 1981 amounts to $217 million and it is proposed to be $84 million in 1982. Again, the major difference being the sea grant program.

What I would like to do now is to address a combination of both research and selected service program activities which fall within the auspices of this committee. Together, these activities form a large part of the core of our programs.

In total, these program areas amount to $374 million.

Mr. Chairman, if I might point out, I understand you have a chart before you which has a number higher than the $374 million. The reason for that is you have included the satellite activities. We did not include that in our testimony, and that is the difference between your chart and ours, otherwise, it is about the same.

Most of the science and services activities are carried out by the Office of Oceanic and Atmospheric Services, primarily by the National Weather Service, and to a lesser degree, by the National Ocean Survey and Environmental Oceanic Service; and second, by our Office of Research and Development through the environmental research lab, Office of Sea Grant amd Marine Pollution Assessment.

Quickly, let me turn to the program area we refer to as "weather observation and prediction." These programs provide the basic weather services to the Nation and the supporting research to improve our abilities to monitor, predict, and warn about weather phenomena. These include a basic observational network composed of land surface observation, upper air observational facilities, radar, and display of satellite data. Next, a basic communication system for collecting these observations and disseminating forecast products. Finally, a major computer facility that provides forecast guidance to all of the field forecast offices in the United States.

Supporting all of this we have a system of laboratories which study certain hazardous phenomena such as severe thunderstorms and hurricanes. We also have laboratories that develop techniques for remote sensing of the atmosphere and for making improvements in the numerical weather predictions computer forecast.

The basic forecast and warning element is provided through a network of nearly 300 field offices which prepare and disseminate forecasts and severe weather warnings to the public and industry. These offices also provide forecasts and warnings for certain specialized activities like aviation, agriculture, and forestry.

Two specialized centers are responsible for providing forecasts of hurricanes, tornadoes, and other severe weather.

Our 1981 budget request for weather observation prediction is $265 million, and as I mentioned previously, there are a number of specific, increase items. I won't go over in detail, as it is covered in my testimony, the items that I have mentioned already in the front.

I may only say that one of the questions that is likely to come up before the committee will be the question dealing with weather service offices. Let me just briefly touch upon that issue.

The weather services offices that we have already proposed, are currently proposing to close, and are proceeding to close, are our part-time weather service offices. They have limited major network data acquisition responsibility for upper air and weather radar. Their country forecasts and warning responsibilities will be assigned to adjacent offices. Where offices to be closed operate NOAA weather radio transmitters, it may be possible to operate these transmitters remotely from nearby offices. For the forecast offices that are planned for staff reduction; aviation, marine, and agricultural forecast services will be provided by adjacent weather service forecast offices. State and regional forecast guidance will continue to be prepared at these eight WSFO's and supplied to those WSO's currently in their area of responsibility.

I might mention some of our reductions also, Mr. Chairman. They affect our support of other agencies and we have had to trim back in our service, for example, to the FAA, and to the Nuclear Regulatory Agency.

In addition, we are proposing to terminate the fruit frost warning program which will reduce overall employment by eight positions. We think the citrus industry will be able to use routine general area forecasts by the National Weather Service to get minimum temperature information and forecasts. It will be clear, however, that if they want specialized weather information they will have to contract with private meteorological services.

The next category is weather modification. Our program is aimed primarily at researching technologies for practical weather modification. Studies underway include modification of clouds to increase rainfall. The objective of the program for modification is to develop a technology that ultimately can be used by the State and local agencies to augment water supplies and benefit agriculture.

Major field experiments have shown there can be localized increases in precipitation of up to 50 percent due to cloud seeding and also areawide increases. Experiments to confirm the effectiveness of seeding have been conducted for three summers, ending in 1980 and data analysis will be completed in 1981. A model for simulating the response of clouds to seeding has been developed along with a way for testing. Specific cloud studies are being conducted in the Midwest to explore feasibility of augmenting some rainfall in corn and soybean belts.

The 1981 request for our weather modification programs is $6.1 million. This includes an increase of $1.1 million to study the role of ice crystals in the life cycle of clouds.

Let me turn to air quality. Research on air quality in our agency is oriented toward the basic understanding and possible prediction

of the influence of human activity on the quality of the atmosphere. Activities in this area include monitoring the global concentration of carbon dioxide and ozone, and predicting the trajectories of contaminated air masses, including radioactive debris or volcano eruptions. In addition, studies are being conducted on the physical processes involved in the transport, diffusion, transformation, and deposition of air pollutants and in particular, acidic chemicals which cause acid precipitation.

NOAA has provided meteorological data, forecasts warnings, and advisories to support Federal, State, and local programs in the management and control of air pollution and air quality. Most of these services have been performed on a reimbursable basis for other Federal agencies, but NOAA is phasing out some of the program in order to achieve mandated personnel savings. Areas with the greatest air pollution potential and other Federal agencies, we believe, needing such services, can contract for private meteorological services to advise the public of air pollution conditions.

Our total request in this area is $5.8 million. This includes, as I mentioned previously, an increase of $1.9 million to begin a 10-year research program on acid rain.

Mr. SCHEUER. Can I ask a question there, on behalf of the States?

The eastern seaboard is very much concerned about acid rain—New York, New Jersey, Connecticut, Rhode Island, and the New England States, especially Vermont. Acid rain is thought of as a problem not only in the long run for which your 10-year study will be very helpful, but also a problem even in the short run. In the long run we will all be dead. Acid rain not only poisons our waters and raises the acidic level of the water to a point where fish can't survive, but also raises the acidic level of our diplomatic relationship with Canada to the point where it is a major problem.

This very item has been on the Today Show every day this week.

What have you got going in research that could tell us now how we ought to be legislating on acid rain? What do we do for the States that are the victims or are the producers of the pollutants? What do we do for the victim States where they allege that the cause of the acid rain coming into their States in the Northeast is a dozen or so polluting plants in the Midwest? We need some public policymaking now on acid rain. It is a current problem of enormous dimensions.

I applaud you for commmencing a 10-year study. But the drowning man needs someone to throw him a life preserver and can't wait for safer vessels 10 years from now, when he is about to go down for the third time.

Mr. WALSH. Mr. Chairman, I think that what you are saying is exactly the problem, however, what I am trying to explain to you today, and I think this is a very good point, is what is NOAA's role in such activities? The regulatory responsibility, as regards air pollution, of course, resides with the Environmental Protection Agency. We are, as I said before, in these areas in particular, principally a science and services agency.

Mr. SCHEUER. Right.

Mr. WALSH. We provide our neutral expertise outside of the regulatory framework, but associated with it, and provide our expert advice on the causes and effects of this kind of activity.

Clearly, the issue of regulating acid rain is one that could be addressed by the Government through the clean air regulations. We are negotiating with Canada with regard to our discharges. It is believed that heavy industrial activity involving the emission of sulfur is a major difficulty.

The only solution right now, given what we know, I guess, would be to simply shut down the plants and, of course, it is not acceptable. So, people decide, can we know more precisely? Can we define our understanding as to the precise causes and effect, to find a way to mitigate or eliminate the problem?

Right now, we don't know enough to say precisely how to do it, so we are left with the crude choice of shutting something down or not shutting something down, or studying it in the meantime.

I don't mean to say we are always going to come to you and say "give us 10 years' worth of research and we will solve the problem." Obviously, our job is research, and that is what we do, I think, best, but in the short term the social choices as to what you must do in order to prevent this problem are now being focused on by EPA, and properly so, that is their role.

Mr. SCHEUER. And there is no shorter timeframe you can give us, such as 24 months or a 12-month study that will at least synthesize existing knowledge and produce some interim recommendations?

Mr. WALSH. Well, you know, we have pretty well—or I think the Government has done a pretty good job of synthesizing what is currently known. But I think that, even though I will defer to Ferris in a minute, because I am not a scientist, but they still don't know enough to tell precisely what the cause and effects are. It is a very complicated chemical process that is not yet thoroughly understood, and as a matter of fact, there is some evidence that high acid, for example, sensors in Honolulu, have detected an increase in acidity even there, in areas unrelated to industrial activity. Acidity is beginning to elevate around the globe.

Mr. SCHEUER. What was the cause of the rising levels in Hawaii?

Mr. WALSH. I will let the scientist try.

Dr. WEBSTER. If I can make a couple of comments. As was said, what our concern about the major action here is, we don't understand action to close down plants might result in economic damage which would not be commensurate with the nature of the problem.

What Bud was referring to is, we have maintained, or NOAA maintains, a global network of air sampling stations. One is at the top of Mauna Loa in Hawaii far away from industrial sources, and it has shown rain levels comparable to some finds in the Northeastern United States, and yet, there are no upstream plants. We have even collected samples in Madagascar and the Indian Ocean which have higher acid levels than the Northeastern United States.

A few years ago we looked at the giant smelter in Seabreeze, Ontario, generally thought to be one of the main sources of acid rain in Canada. It was on strike for 6 months, and during that time, no diminution of acid rain in the surrounding area was detected.

The problem we face is to try to get a basic scientific understanding to make an informed decision about public policy. There is a real danger in getting stampeded here. I am very sensitive to the international problems involved here, but it is easier to get concerned about it than to get the information that we need.

We see our role in NOAA as an agency, as a commitment to get the kind of information; solid-type information on which we can make public policy decisions.

Mr. SCHEUER. I take it you see no hope of getting us anything very useful for our public policymaking in the next 6 months or 1 year, let us say?

Mr. WALSH. Nothing definitive.

Dr. WEBSTER. I would not believe we would define the problem into a time scale, although it was mentioned Federal agencies have gotten together and we produced a national acidic program which is a draft program. If you don't have a copy I will be happy to send you others. We will have a public workshop for comments on this plan in early April, where non-Government agencies will be invited to give comments and as a result of input from the workshop and what has been solicited in writing, we will come back with a final plan to Congress in the next few months.

Mrs. SCHNEIDER. I am curious to know whether the budget for NOAA's involvement in research in acid rain has been looked at by OMB in conjunction with the budget for EPA's activities with acid rain?

Mr. WALSH. I think Ferris should answer it, because as required by a recent statute, there is an interagency team. Ferris, at the present time, is serving as the chairman of that research team and the plan that we are referring to here, Mrs. Schneider, identifies how the Federal Government has parceled responsibilities which include the Department of Energy, EPA; Ferris can fill you in.

Dr. WEBSTER. The recent legislation establishes an National Acid Precipitation Task Force. I am one of three cochairmen along with representatives from EPA and the Department of Agriculture.

Mrs. SCHNEIDER. You have already convened?

Dr. WEBSTER. We have had several meetings, met with OMB, and submitted agency plans for the next 2 years to the Office of Management and Budget. They have done a budget crosswalk and as a result, have come up with their recommendation for agency roles. The number we propose for fiscal 1982 is a number we worked out in accord with OMB.

Mrs. SCHNEIDER. $1.9 million?

Dr. WEBSTER. That is correct. And we looked, at the same time, at the budgets of the Environmental Protection Agency, the Department of Agriculture, and the Department of Energy. There are a lot of players in this. I am very pleased with the way this has worked out on our crosswalk. It worked out better, if I may say so, than my experience in cross-agency things of this kind in the past.

I think what may have made it work is a general awareness that this is a problem we can't play around with and that we have to come up with a solid plan as to what we are capable of carrying out.

Mrs. SCHNEIDER. It is good for members of this committee to hear how well it was coordinated, since this committee initially authorized their task force. I, and I am sure other members, will be notified of the specific times and places of your April conferences on acid rain.

Thank you.

Mr. SCHEUER. Excuse me a moment.

Mr. Brown.

Mr. BROWN. That is all right.

Mr. WALSH. I was going to have inserted in the record at this point, the crosscut showing an allocation of $19 million, the particular areas of study and what agencies do with it.

Mr. SCHEUER. There being no objection, it will be entered into the record at this point.

[Material follows:]

INTERAGENCY TASK FORCE ON ACID PRECIPITATION—FISCAL YEAR 1982 BUDGET

[In thousands of dollars]

	EPA	DOA		NOAA	DOE	DOI			TVA	Total
		SE	FS			PS	GS	FW		
A. Natural sources				600						600
B. Manmade sources	870				300					1,170
C. Atmospheric processes	3,273			600	805	50			135	4,863
D. Deposition monitoring	797	304	127	700	497	75	585		18	3,103
E. Aquatic impacts	1,475		135		560	98	645		154	3,067
F. Terrestrial impacts	1,355	964	570		122	186	320		66	3,583
G. Effects on materials	250					235				485
I. Assessments and policy	1,105				260					1,365
Subtotals		1,268	832			644	1550	0		
Totals	9,125		2,100	1,900	2,544		2,194		373	18,236

Mr. SCHEUER. Congressman Brown.

Mr. BROWN. Because we entered into this subject of context of cross-agency programs, I would like to make a comment.

NOAA is involved in several of these kinds of things, including CO_2 study, and others. It seems to be in the nature of the problem that this committee deals with—basically, research development and environmental matters.

The question is a common one: How do we organize the programs? As a matter of fact, the Climate Office itself in the national climate program, is an effort to structure a cross-agency program in order to manage a very large-scale program.

Now, the acid rain program, from your comments, seems to be working fairly well. As far as I know, the CO_2 program is working fairly well. But the national climate program office does not seem to be working so well, and I am wondering as to what the differences here are. Is it a matter of scale or time? That is, is it easier to do this on a short-time crisis basis than on a long-time program which may cut more deeply into the tough considerations or something of that sort?

I am asking if you could comment on this for my general illumination?

Mr. WALSH. Yes, Mr. Brown. I can speak from experience.

We can all speak from experience in handling interagency programs. Ferris, Dick Hallgen and I, all of us at NOAA participate in one way or another, in some interagency programs.

In the meteorological area, we are to be the lead of the entire Government for all meteorological services and in pollution, we are to be the lead for developing a plan, as well as the climate.

Let me give you observations based on my 4 years of experience of this type.

No. 1, one of the major difficulties that you come up against is the question of turf. Each agency, as you know, has a set and series of mandates. It has a series of committees it must report to. It has a series of constituencies it must deal with. And it has certain plans.

When you try to coordinate cross-agency, these conflicting goals, objectives, constituencies, and positions of power and politics, make for different views of what is important and what is not. Therefore, there is a natural conflict.

No. 2, there are difficulties, I believe, with the way the Federal budgets are analyzed.

No. 1, they are analyzed on an agency-by-agency basis and in broad, general functions. There are very rare crosscuts. Crosscuts are very beneficial, we find, in these areas and they are useful because, the way the normal budget process works, a budget examiner for an agency like NOAA looks at a very large science and services component. However, in another department, Energy for example, it may well be that the CO_2 area is not as closely analyzed as some other area that is likely to be much larger.

So, what you have is a budget examiner in DOE looking at CO_2, at very different times and with different requirement priorities. The crosscut gets hard to make. That is why, in these particular areas, since all of the agencies that we have been talking about are basically mission agencies doing applied research, and I am not talking about the National Science Foundation, and that the basic principle of the Office of Management and Budget is that each agency does its own research to support its own mission.

When you try to crosscut through this, there is a natural conflict between the agencies, and unless you have a major restructuring in the budget review system or the power of those that are in charge of their various agencies, it is going to be difficult to say that this agency, like NOAA, is now in charge of all marine pollution in the Government, or in all climate. It won't happen. It won't happen. And what is required then is a very active effort to coordinate these differing and often directly contradictory goals, objectives, ecentricities, pollution-politics, and power, and it is a difficult process in the Government.

Mr. BROWN. Well, I think we are becoming aware it is a very difficult process, but by the same token, it is a very important process if we are to focus on a rapidly changing set of global problems and an effective way and optimize the use of resources to solve these.

For example, both acid rain and CO_2 and some other problems I could mention, are subsets of a global climate problem. Unless you have a global climate program or at least a national climate program, you don't begin to perceive the emergency problems and act on them in an intelligent way until they become crises in somebody's agenda. This is the basic rationale which I think made Congress feel that we need some more flexibility and comprehensive approaches to some of these basic kinds of problems.

Mr. WALSH. Yes, sir. I didn't mean to imply that nothing good has resulted from what we have done so far. I happen to believe that if you accept the reality of the way the Federal Government is

structured and works and once you do away with too great a speculation, the improvements that have been brought about in both the climate and pollution area and acid rain have been very good.

I mean, for the first time we know what the Federal Government spends on marine pollution. Three years ago we didn't. And scientists in one agency didn't know what the scientists in other agencies were doing just 3 years ago. Now, we do. Now we are beginning to identify priorities and now we are going to identify what is the best thing for one agency to do as against another.

I happen to believe the climate program has been more successful, given the realities of the Federal system, than I think has been given credit. We are focusing on what is needed; we are looking at what agencies do best, and making sure their budgets focus on it, and there are plans, goals, and objectives.

In addition, we are coordinating the NOAA research program with the Federal program, and, through the World Meteorological Organization, we are tied into the world climate program. We are not talking about a tremendously disparate community. This is a community that is generally fairly well knit and where the people know each other; they know the kind of research that is going on and now with these plans, the interaction that comes about, I mean, you don't want to make a science plan too fixed, too firm, because that is not the way science works.

We think this is a good approach. It could have a little more strength behind it, but I don't know whether the Government will respond to that. But I think it has been positive, and I think it has been useful and I think we know where we are going.

Mr. BROWN. Well, that is very encouraging, Mr. Walsh, and I am very pleased to see that kind of a statement on your part. But I wish it was borne out by a little more concrete indications that we are giving some of that strength and putting the resources necessary to accomplish these goals into the program. That is not quite obvious to me at the present time. I hope it can be remedied, but I think you have precisely the attitude about the program that is important, which I think movitated the Congress to originally enact it.

I don't think we are trying to be dogmatic. I think we recognize this is an experiment but that it is a very important experiment to carry out properly in order to satisfy if we can't more effectively achieve a public purpose in this way.

Mr. WALSH. Let me make a final comment, if I may, because you have raised really the question of resources, the question of budget, and we will admit that we would like more money if we could get it in every area that we are engaged in activities.

I don't think I would want to say anything differently. However, we are constantly looking at priorities. Particularly in an agency such as this. This is one reason why I wanted to put this chart up.

As we are sitting here at the top of an agency like this [pointing to chart], in deciding priorities, we have to choose between such things as: do we maintain the weather service in the way we need to, and just maintenance alone costs $35 million, just maintenance, to then move to a new computer system for communications is going to cost $184 million over 20 years. To buy a new satellite cost

$200 million. We spend $75 million a year on computers alone, just maintaining our computers.

Then, the question becomes, as we are going through a process of adjusting to new statutory responsibilities, to pressures within the public to reduce Federal expenditures and Federal employment, inflation is driving all of the assets we have, particularly aircraft, ships, computers, satellites, it is going faster than the normal rate.

I am saying it isn't satisfactory to come up with more money in all the areas we want to deal with. We think we have a good set of priorities and that this budget hits the real important things the best way.

Mr. BROWN. Mr. Walsh, I don't want to be presumptuous, but under the Constitution, the Congress is supposed to make these decisions about priorities and you are supposed to give us the information on which to make it.

Mr. WALSH. It does't always work that way. It sometimes heads up to the office called "Administrator," and it squeezes very hard.

I would be glad to discuss priorities.

Mr. SCHEUER. Just one comment, and then a question.

And we are going off the record.

[Discussion off the record.]

Mr. SCHEUER. Back on the record.

I gather from your colloquy with Congressman Brown, that there is more quasi-coordination. NOAA is going to formulate its plans with knowledge of what EPA and other agencies are doing so there may be less overlap and less duplication and less gaps.

Mr. WALSH. It is coordination among equals rather than—that is kind of a Soviet 5-year plan, where one is in charge.

Mr. SCHEUER. Now, disregarding that perjorative characterization of long-term planning, should there be some capability for producing a comprehensive logistic master plan for moving forward, let's say, in marine science research or atmospheric science research? Or is it the optimum that we can hope to expect that this sort will advance sometime, that at least the agencies are proceeding with knowledge of what the other agencies are doing, and that some planning is occurring? What is the optimal degree of long-term planning, that ought to take place?

Mr. WALSH. I will give you my opinion, although I am not so sure I have a grip on what is the optimal.

First of all, you should know I am not a scientist, but I have come to appreciate in the last 10 years, the scientific method. I am not totally convinced that a single focus of decisionmaking that determines a plan is the right way to go. No. 1, because the kind of areas we are talking about involve an incredible number of very difficult disciplines of many types. It would be hard for one single scientist or one group of scientists to sit down and map out a fixed plan and say, "We are going to get to these milestones." The scientific method is a building block, one that evolves over a time with scientists chasing their ideas and concepts to scientific proof and having it tested in the peer system. It would be very difficult, I think, to come up with a Manhattan plan for everything we do. This has always been a difficulty that has arisen.

I would have to say that, from my own experience, I am not sure that kind of thing is possible or will work, because of the scientific method. We can't drive science that fast.

Mr. SCHEUER. Can I ask——

Mr. WALSH. I will be glad to defer to them.

Mr. SCHEUER. I am not asking you to defer to them because we have a healthy respect for your opinion. I am simply asking for Dr. Hallgren and Dr. Webster, as scientists, to add their thoughts on this matter.

Is there some further degree of a coordinating focus, more disciplined planning, and establishing of turf that is desirable here? If so, how do we get there?

Dr. HALLGREN. I will give a very brief comment.

I have in the past been the Federal coordinator for meteorological services and supporting research on two different occasions over the last 10 or 15 years.

This coordination activity has been in existence for just about 20 years.

It has gone through what I think are three basic phases. First of all, it was getting the agencies together and understanding what each one was doing in the areas of meteorological services and supporting research. Much happened in just the last few years; the last few years under marine pollution. And this provides a lot of good, because we understood each other better in the programs than we could. They coordinated the program and eliminated duplication that was in existence. This was done in the early sixties.

The second phase we move into is a major research program, the global atmospheric research program, in which we put together a total plan for the program for the decade of the 1970's. That plan was executed and the agencies had specific roles and specific contributions that they were called on for—that were called for under the plan. They did respond and they did a very good job.

I think that that is the model. But it was narrower; it was a narrower activity, while still fairly broad, than the whole of it.

I feel we are now in a third phase. We know each other's problems very well. We know where we can work to the common good of doing a better job by collaborating and we have two major areas that we are undertaking right now. One deals with the next generation radar, a Doppler radar system. These agencies need it: TFAA, DOD, and NOAA. We are together and we have put together a joint special project office. That is the best way of doing that one, and in this case, the Weather Service has the lead--and the deputy, in fact there are two deputies in the project office, one from FAA, and one from DOD. We are proceeding with a joint development and, hopefully, procurement of this system.

In other areas, such as automation of surface observations for aviation, a major effort is going on to try to get the human out of that loop in order to save people time in taking these observations.

Again, DOD, FAA, and NOAA are the ones that need that type of assistance.

We have created a joint special project office in this case, with FAA as the lead, and the FAA person as the project manager, and we have deputies from DOD and the National Weather Service.

My opinion is that you have to tailor the way you go about it to the problem, or program, that you have at hand. In general, wherever you have a very, very broad area to cover, there is no way of putting one master plan together that would have the vision and be able to take into account all of the different needs and different timeframes of all the agencies. But to narrow it down to a fairly broad program, that is a little more difficult, but it is still doable. We did it in the global atmospheric research program.

But, when you really do it best is when you can get down to a major project all agencies need, like the two I mentioned, or the acid rain question or the CO_2. It is easier then. You can get the people together. They are not struggling and you can put the program goals and objectives down. You can say, "this is what has to be done." I find it quite easy to get on with it then. Sometimes it is a little difficult to get funding.

Mr. SCHEUER. Dr. Webster.

Dr. WEBSTER. Thank you, Mr. Scheuer, I won't take a long time to repeat what has been said.

Let me add my observation that an interagency coordination works best when there is a shared conception of what the objectives are, and when that objective is also shared by the Office of Management and Budget, which is the only entity we have in many of these agencies that has the crosscutting responsibility.

Mr. SCHEUER. I am not addressing myself just to coordination, but going a step beyond that and saying: Should there be more than coordination between coequal feudal principalities? Should there be some kind of logistic master plan? Maybe that is not possible to achieve, and maybe it is not desirable to achieve? Those are the questions I am asking.

Should there be more than coordination between independent coequals?

Dr. WEBSTER. Mr. Chairman, I hate to make a categorical response to that. I think it would depend on the issue.

Mr. SCHEUER. Let's take acid rain. Mrs. Schneider and I, and other members, are deeply interested in the question of acid rain.

Is a higher degree of planning and synthesis in order, above and beyond the degree of coordination we seemed to have achieved now?

Dr. WEBSTER. Mr. Chairman, we are trying to find a balance between an agency's mission responsibilities and overall effective use of national resources and achievement of objectives.

If we generalize too much, I am afraid we may compromise the agency's objectives. We sometimes crosscut and overlap within an agency. We can take acid rain, we can take climate, marine pollution, any of these, and can optimize the whole Federal Government around the issue.

At the same time, there must be varieties. If we did it with this agency, if we optimize acid rain or climate in an agency, a number of other important missions of the agency would have to be compromised. We don't have the resources to do everything.

I am a little concerned about setting up centralized planning of a strong nature when it is not needed. Sometimes it is not. I think in acid rain there is a conception of what we want to do, and I think the system is working.

I would go back to what Congressman Brown was asking about climate before. I think the honest answer is there is an issue there which is controversial, and there is no shared agreement on all objectives in the climate plan. For example, there is a proposal for experimental forecast centers which is of some controversy, and unless there is shared agreement of what the objectives are, there will also be these kinds of problems that can't be resolved.

At the same time, to go the whole way toward a strong central coordination, I think it inevitably has to breed some kind of damnation on programs that are not so favored and possibly distort the role of an agency like NOAA, which is involved in half a dozen of these, of major importance.

Mr. SCHEUER. Mrs. Schneider.

Mrs. SCHNEIDER. I don't know, were we going to have Mr. Walsh complete his testimony, or should we proceed on with other issues?

What would you prefer, Mr. Walsh? Would you prefer to finish and then we will ask questions?

Mr. WALSH. However you wish to do it. I find it to be very interesting.

Mr. SCHEUER. All right, since there are not that many Congressmen to ask questions we can sort of be informal and enjoy the benefits and pleasantness of informality.

Mrs. SCHNEIDER. Since I have a long list of questions I will accept that opportunity.

My first question is a rather short one relating to some changes in the budget. I would like to have a little more information to implement the Deep Seabed Mineral Resources Act, $829,000? That seems like a lot of money.

I am anxious to know how you are planning to spend those dollars to pay salaries of the people who are working on the regulations and people who are doing the international negotiations? Is it primarily salaries?

Mr. WALSH. Primarly salaries.

Mrs. SCHNEIDER. Rather than research.

Mr. WALSH. There is no major research program there. There is some money associated with the work we are doing, for example, to characterize things from the processing activity in deep sea mining, but by and large, it is not major research.

Mrs. SCHNEIDER. How about the Ocean Thermal Energy Conversion Act?

Mr. WALSH. Same thing.

Mrs. SCHNEIDER. How is that going to be piggybacked with the activities that will come under the jurisdiction of this committee?

Mr. WALSH. Well, as I understand it, the Department of Energy has decided not to fund the demonstration project on OTEC that they had planned, which I believe involved $50 million and a major effort.

Mrs. SCHNEIDER. That is in the proposed budget?

Mr. WALSH. Well, it has been proposed to be reduced.

What we are doing right now is the one place we see being a major interest in building a plant now and without the Federal Govenment involvement. It happens to be on the Island of Guam. We are apparently interested in building a thermal facility onshore and running the pipe offshore. We understand they have even

gotten private backing, and financing for that kind of project. That seems to be the one farthest down the road.

The others are, as you know, major at sea activities that are still at a very small scale and therefore not moved up to the full scale. To move to the full scale is a very expensive proposition and the Reagan administration is proposing that it not be entered into, that the private sector take that on.

Mrs. SCHNEIDER. Another relevant item is that a subtraction of $450,000 has been proposed to reduce the level of field activity at Puget Sound and also in New York.

By recognizing that those are dollars that will be deducted from the budget—is that to imply that you have answers on the New York bit and you have reached certain conclusions?

Mr. WALSH. What it means is, given that we have researched the New York Bay now for about 6 years, rather expensively, that we have spent several million dollars and that we are in the process of writing up our observations. It does not imply we have answered definitely all of the questions we sought to answer, only that we have a degree of understanding in that area that is considerably greater than other areas we would like to get into.

As a priority matter, we are phasing out of the New York Bay and focusing on other questions in the marine pollution program. For example, we are focusing on problems such as serious toxicants like synthetic organics, and things of that sort.

Mrs. SCHNEIDER. Which leads me to another question about PCB's, since you brought that up. [Laughter.]

PCB's were found in some of the dredged sediments and there were threats to close down the New York Harbor.

I wondered, have you developed any specific solutions based on research you have been doing there, to help solve that problem?

Mr. WALSH. Well, first of all, let me explain that our research has been in the bay, not in the harbor. We were involved in the question of the dumping of dredged spill from the New York Harbor.

As you know, there is a serious problem with much of the spill that would be removed, particularly around the interpier area, because it contains very high levels of polychloride benfennals [sic], as a result of some leakage. We have been involved in the effort of analyzing how the permit should be evaluated on the basis of the ocean dumping law. They have to get a permit from EPA. They have to work with the Army Corps of Engineers as a joint regulatory authority that governs between EPA and the corps.

We advise them on the science. The involvement, I remember to date, and again, we can bring you up to speed by giving you a report on it, but there was an effort to analyze what it meant to say that there were trace elements. In other words, it can't be dumped if there are more than trace elements of certain toxicants in the dredged spill. It came down to the creation of what is called a matrix system.

I believe it was three groups of various types of organizations analyzing the uptake of that toxicant, and coming out with a decision on whether, based on this matrix, it was more than trace.

As I understand it, the decision according to the matrix system, was that it was not more than a trace level and, therefore, it could be dumped.

We are also engaged in a major effort with the Army Corps of Engineers to begin to develop these kinds of technical biological methods. As you know, the biology is used. And we are trying to use other means of assessing what the toxicants are and what they do to the environment in order to judge whether to dump or not.

I would prefer to give you a more detailed answer in writing on that subject.

Mrs. SCHNEIDER. I would be very interested in that.

But, from a scientific point of view, do you feel, Dr. Webster or Dr. Hallgren, that the interim Corps of Engineers and the EPA matrix, is moving along the right track?

Dr. WEBSTER. I'm sorry, I don't think I should answer that one. I am not qualified enough to answer it.

Mrs. SCHNEIDER. Dr. Hallgren, do you have any feel on that?

Dr. HALLGREN. I don't know that I have.

Mr. WALSH. Well, we will try to give you a status report and give you our opinion with regard to that process. We have been involved and our formal opinion has been given, but we have not brought ourselves up to speed in preparation for this hearing, but I can get you that answer.

Mrs. SCHNEIDER. One of the things the authorization covered in this hearing dealt with marine ecosystems investigations and also the Ocean Dumping Act.

As you know, that is to end in 1981, I guess, December 31, and I was wondering if you were familiar with the recent study by the National Advisory Committee on Oceans and Atmosphere, and what their conclusion was. It seems to conclude that the ocean disposal of certain wastes should be considered environmentally sound. Obviously, there is a conflict there.

I am curious to know where NOAA might be coming in, based on their scientific approach?

Mr. WALSH. That is obviously a very difficult question.

Let me give you, first of all, the report of the National Advisory Committee on Oceans and Atmosphere. It is in draft form, not in final form, and we have not had the opportunity to evaluate it in total.

As you know, what it recommends is that the dumping of certain waste material be analyzed on a multimedia basis. It also notes, however, that the basis of our laws, particularly those relating to the protection of the oceans, are the least acceptable alternative to the handling of these wastes. That policy is very clear in the Clean Water Act and Ocean Dumping Act, and it has been made even more clear by the Congress, by mandate, the cessation of dumping of sewerage by December 31, 1981.

Just last year they reiterated it again by putting the same ban into effect for industrial waste.

Mr. SCHEUER. If the witness will yield, that is an assumption. It may or may not be a sound assumption. The NACOA report argues against the current medium-by-medium approach to waste disposal. And they seem to conclude that ocean disposal of certain wastes

like sludge may be the most environmentally benign method of disposal.

Now we are faced with a condition—not a theory, as Grover Cleveland mentioned years ago—in New York City where we have a lot of sludge to dispose of. The question is what is the most efficient way to dispose of it? The indication is that it may be ocean dumping. The New York City environment administrator is convinced it is ocean dumping, and they have evidence that seems to indicate that properly planned ocean disposal of sludge is environmentally benign and has no degrading health and environmental effects that can be verified.

It is important to know this because if the deadline holds, we will have to spend over $1 billion just in New York City to effect land disposal of sludge. There are five different parks in my district alone, over which they want to spread the sludge and you have two questions there: What is the health effect that is threatened? And what is the perception of the health effect that is threatened? Those are two quite different questions, but are both very important, especially for an elected offical.

In my district, there is a very great degree of concern over the health threatening effects of spreading sludge over five separate parks.

Now, as a scientific matter, it may not be of great consequence, but there is a very great concern there. The order of magnitude of the health threat to land disposal of sludge in this fashion may be very much greater than properly planned and properly executed ocean disposal.

It is these questions to which we hope you will address youself in a very short timeframe, because we have a deadline coming up against us; December 31, 1981. The condition that we are faced with is meeting the deadline.

Do we go head and spend $1 billion or do we do something at a fraction of that cost that might not be less environmentally degrading?

Mr. WALSH. Let me respond to both of those questions.

Mr. SCHEUER. And I would particularly like any suggestion you might have as to disposal at the 106-mile deepwater site, I would like to know what your studies show about this. It is this site for disposal that the New York administrator tells me that is environmentally benign.

Mr. WALSH. Let me respond in a general way to both questions and try to keep out of the middle.

First of all, NOAA has, in the past, supported the dumping ban. The reason we have supported the ban is this. From our studies we do not believe that the major source of pollution in the New York Bay is sewerage sludge dumping. It is a contributor, but not a major contributor. The major contributor to pollution problems in the New York Bay area are just a general runover in the entire Hudson River estuary, the things that come out of the sewers, the things that run off outside of the sewer system, the nonpoint sources, and that whole immense amount of waste material that come out of that metropolitan area. And therefore our conclusion was that we don't believe that sewerage sludge is the major contributor. However, as a practical matter, it is probably the one

thing that you can get your hands on in order to prevent further degradation and in order to deal with all of this other runoff, there would have to be a major investment or treatment or somehow containing nonpoint sources and normal runoff. That is enormous.

The story we like to tell is the dentist who washes a little mercury down his drain after fixing teeth may be a major contributor to mercury. How do you control it since there are many dentists in New York City doing the same thing, and it all goes out to the sewer thing and controlling that for society requires an enormous change of habit or investment.

Mr. SCHEUER. Gentlemen, I don't like to interrupt you, but our tertiary sewer system is having a substantial effect on the general pollution of the Hudson River and Jamaica Bay. For example Jamaica Bay is swimable. The Hudson is going to be swimable in a few years, and as a matter of fact, the Potomac River will be, as far as I am informed, in a few years.

The sewer system on which we spend, I don't know how many hundreds of millions of dollars, is not an exercise in futility but is working. We are faced with the specific problem of ocean sludge, and it is not theoretical but a practical problem in the here and now. If, at that 106-mile deepwater site, your studies show it to be benign or virtually infinite, it seems to me then that we ought to forget about lifting that deadline of December 31, and place proper concern on the Delaware beaches and all of the beaches whose elected representatives are concerned about very unattractive material washing up on their shores. That is a top-priority concern of ours, but it seems to me that we may be getting the best of two or three worlds here, if we do a multimedia risk/benefit analysis of dumping at that 106 deep waste site, or something comparable to it.

Mr. WALSH. I was going to say that our opposition to the sewerage sludge dumping was on the basis the sewerage sludge dump would occur at the 12-mile site that had been expressed, and we felt further dumping at the site, because it could have been controlled, should not be acceptable.

Mr. SCHEUER. Let's concede that point.

Mr. WALSH. The studies at 106 do not show the kind of damage as at the 12 site. I don't think we will say definitely it is benign, only that we don't detect major deleterious effects similar to those we noticed at the 12-mile site.

Mr. SCHEUER. If you don't know enough about it to quantify the level of risk, then that, on the bottom line, is what we have to know because we need to make various risk/benefit analyses.

Mr. WALSH. That is correct.

Mr. SCHEUER. The cost of this type of ocean dumping at the 106-mile site as against land fill on a whole lot of urban parks that people are quite concerned about.

Why didn't you ask for more research if you don't think you have enough?

Mr. WALSH. Well, we have done enough research, so I think we have come to a ball-park figure. We have to understand the ocean dumping law creates a presumption that it is bad. Therefore, the definitive evidence must prove that it will not harm something. Therefore, based on that approach, it is very difficult to come up

with definitive evidence. It just depends on how you cast the burden of proof.

What I am saying is, the law itself——

Mr. SCHEUER. Well, we don't need you to cast any burden of proof and you don't have to look at the law. We made the law based on a certain knowledge on the facts that was then unavailable to us. You forget about the law, because the public policy decision belongs up here, as was mentioned by Congressman Brown a few moments ago.

What we need from you is the best information and counsel that you have, as to the relative environmental degrading effect of ocean dumping, let's say it is at the 106-mile deepwater site, or perhaps some other location that you might find as less degrading compared to the land disposal of sludge. Those are the alternatives we are faced with. Don't you worry about what laws we passed. We passed laws based to a considerable extent on your counsel and insights. We passed that law based on knowledge it was valid at that time. You forget about that and give us the best state of the art you can and give us the best risk/benefit assessment you can, as to the relative cost and relative benefits of ocean dumping at this 106-mile site, if you have such a suggestion, as against landfill disposal.

The quicker you can get that to us the quicker we can make the public policy judgment that we have to make as to whether that December 31 deadline is a valid one. But don't you concern yourself with it. That is what we are paid to do. We have a lot of people that think we are overpaid, and if we are, we are overpaid to bite the bullet on these kinds of judgments and all we want from you is a very objective professional appraisal of the costs and benefits of these two alternative means of disposing of sludge.

Mr. WALSH. I would suggest, however, that we proceed in that direction, Mr. Chairman, because EPA has the responsibility for studying the effects of land-based authority. Send me a letter and send the agency administrator of EPA a letter and ask that we get together and we will try to give you a summarization.

Mr. SCHEUER. Summary. Don't go so far. Summary of what we know as between the land-based alternative, the 12-mile outside alternative and 106.

Mr. WALSH. We will do that, and thank you.

Any questions?

Congressman Brown.

Mr. BROWN. Thank you.

Do you recognize me?

Mr. SCHEUER. Absolutely.

Mr. BROWN. You have not discussed the closing of those weather stations in my absence, have you? You pointed out the fact you may anticipate some congressional difficulty with that, and I assume that the reduction is justified on both economic and technical grounds.

I notice you are moving ahead with the AFOS system; is that correct?

Mr. WALSH. That is correct, we are now going through the major tests of the system of the AFOS system right now.

Mr. BROWN. That is part of the justification for closing down the part-time systems?

Mr. WALSH. I wouldn't say the installation of AFOS is justification.

The exercise that led to the proposal to reduce weather stations was strictly related to the directive we got to reduce our employment by x percent. We then spread out to the agency. We had our various components rank up the priorities of where these cuts might come.

As you know, we have prepared in the past and it was, of course, not proposed in the past or it was not accepted, that we, the National Weather Service, in order to reduce our full-time employment component, close the part-time weather service offices. The basic driving force here has been that directive to reach a certain percentage.

Mr. BROWN. Well, the problem has the same sensitivity as closing a military base or any other installation. Frequently these part-time offices are those which have the largest constituency of support, because they provide a useful service to a consumer group, and of course, this is an integral part of your responsibility, to provide us full services to consumer groups.

I have no objection to closing down less cost-effective facilities, but I would like to feel, and I think most Members of Congress, and this committee would like to feel that there is some effort to upgrade the public service. That is, the ability to provide necessary data to constituencies being served by the agency.

I don't want to belabor that at this point, but we will discuss it.

I did want to try to clarify the situation on the satellite thing. NOSS is effectively zeroed out. That has been done across agencies, so it is not just you, but it is also the other two agencies?

Mr. WALSH. That is correct; yes, sir.

Mr. BROWN. So, there is nothing we can really do here one way or another, even if we wanted to, probably.

Mr. WALSH. Yes.

Mr. BROWN. On LANDSAT, this seems to me to be kind of "on-hold," and I don't understand and am asking for clarification.

Originally, you had the money in your budget to manage an operational system and that has been stricken out. I presume therefore the responsibility remains where it is at the present time?

Mr. WALSH. Let me explain that for you.

Also, I am scheduled to appear with Dave Johnson, head of our satellite service before this committee on the 17th, to explain the current policies on LANDSAT. In the budget, the proposal was always in general. NOAA would take over the LANDSAT system and move it to operational phase, upgrade the data system and so on. Under that proposal we were to take over the satellite funding responsibility from NASA at LANDSAT-D prime.

NASA, as I understand it, still has in its budget the funding to launch and operate LANDSAT-D and LANDSAT-D prime. The budget decision that has come out now is that NOAA would get money in 1983; $353 million to take over the operation of that satellite at that point.

In addition, we have about $2.1 million. We have $2.1 million, not billion, but we have $2.1 million in the 1982 budget for manag-

ing, or for planning to manage these satellites and to develop the spinoff mechanism that we have talked about.

Mr. BROWN. Data spinoff or some other kind of spinoff?

Mr. WALSH. It may well be the entire satellite system.

What we are considering right now is legislation we have recommended and the administration will consider. Based on the need to get authority for an operational system and for a possible spinoff, we have recommended an approach to the Secretary of Commerce and Office of Management and Budget. They will evaluate it and we hope to tell you on the 17th precisely how we come out.

Mr. BROWN. This is about spinoff. You made a study and recommendation with regard to that?

Mr. WALSH. That is correct.

Mr. BROWN. And on the 17th, you will be able to give us information about that.

Mr. WALSH. We hope OMB will clear our testimony that we can be very definitive at that time.

Mr. BROWN. As you know, this committee, not only the subcommittee, but the Space Subcommittee as well, is very much interested in that from the standpoint of both the technology and the institutional arrangements which we feel represent a big gap in the overall process of deploying this technology for more widespread public use. If you have developed a viable proposal it could be a tremendous service to everyone concerned here.

Mr. WALSH. Well, what I think the bottom line of what we have to offer is this. The proposal that had been made earlier in the Carter budget to expand the system in order to get the satellite money in the budget now, to begin to get the new ground system for the schematic mapper, and for consolidating the data service, is now out. The Federal Government—because of the budget situation and economics—is proposing now not to make that major investment. It is believed, or felt, that the future will now either be a delay in the system moving to the point that we previously hoped, or that the private sector will now be interested enough, if invited, to go ahead and move to the level where it can be marketable.

Mr. BROWN. What you are saying does not imply the possibility of a gap in the data sevices as a result of this, does it?

Mr. WALSH. Well, there is always a possibility of a gap in the data services, but, depending on the life of the satellite, we can always try to have one satellite flying and providing the data sevices.

Mr. BROWN. Well, Carter had not made that commitment, as I recall.

Mr. WALSH. The commitment was one of the policy issues; yes. And the question of continuity is one related to the lifespan of the technology and how much backup is needed as opposed to what is not needed. That is always a risky business in the satellite business, as we found out with one of ours just going up recently and missing orbit and being lost to the tune of $40 million.

Then, others are lasting far longer than their expected life.

Mr. BROWN. As we well know, with respect to the question of this spinoff to private industry, I think that private industry would be receptive to a properly planned program to do this. But it is still rife with extremely complete policy questions; the degree of subsidy

decision, who provides the capital, whether it is a segmented spinoff or whether it is a monolithic spinoff to one enterprise, whether that is a regulated or competitive enterprise.

Mr. WALSH. Yes, sir.

Mr. BROWN. You have examined all of these problems?

Mr. WALSH. We have examined all of them and we are prepared to make recommendations, or will be prepared. The administration has basically focused on budget issues related to LANDSAT at this stage. It has not focused, as yet, on the policy issues, and that is what we are seeking to get them to do between now and the 17th.

Yes, we are looking at the regulation and looking at spinoff, and at the process for spinoff and looking at Government versus private role.

Mr. BROWN. This, of course, goes beyond the technological jurisdiction, the technological R. & D. jurisdiction of this subcommittee, but in a sense, it represents a new and extremely important form of institutional R. & D., which we are likewise interested in.

Thank you, Mr. Chairman.

Mr. SCHEUER. We are past 5 minutes to 10, so we must wind up now.

I am going to ask you two questions for which we won't have time to hear the answers, and I hope you will submit them in writing.

First of all, how will the Reagan administration decision of closing down LANDSAT, affect our competitive capability vis-a-vis the French, the Japanese, and European Space Agency? In other words, will the interruption in continuity affect our ability to play a competitive game in that ballpark?

The second question which I have been asked by Congressman Blanchard to ask is, in connection with the $3 million Great Lakes research capability at the environmental lab at Ann Arbor, Mich. What is the status of the proposal to build a research facility for NOAA on the campus at Ann Arbor?

If you answer those two questions, we will be very grateful to you.

Also, Congressman Larry Winn, our ranking minority member, would like to ask some questions and we will submit them too.

With that, we appreciate the very excellent overview that you have given us today.

We will continue with you next week on further discussions of NOAA's program request.

This has been very productive, very thoughtful and a very stimulating hearing, and we are grateful for that and look forward to seeing you next week.

[Whereupon, the subcommittee recessed at 9:58 a.m.]

[The prepared statement of Mr. Walsh follows:]

STATEMENT OF JAMES P. WALSH
ACTING ADMINISTRATOR
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
DEPARTMENT OF COMMERCE
ON RESEARCH AND DEVELOPMENT PROGRAMS
BEFORE THE
SUBCOMMITTEE ON NATURAL RESOURCES, AGRICULTURE RESEARCH
AND ENVIRONMENT
COMMITTEE ON SCIENCE AND TECHNOLOGY
U.S. HOUSE OF REPRESENTATIVES

MARCH 12, 1981

Mr. Chairman and Members of the Subcommittee, I am pleased to appear before you to discuss NOAA's science and services activities over which the Subcommittee exercises jurisdiction and the Administration's proposed FY 1982 budget for these activities. I shall first briefly review NOAA's overall missions, organizational structure, and budget so that you may understand fully how science and services programs relate to NOAA's other activities. Next, I shall discuss in detail the FY 1982 budget for the science and services activities with which this Subcommittee is concerned and explain how these programs are designed to achieve particular goals. I have divided this latter part of my discussion into nine major science and services activities:

A. Weather Observation and Prediction

B. Weather Modification

C. Air Quality

D. Climate

E. Marine Observation and Prediction

F. Marine Pollution Assessment

G. Solar Terrestrial Research and Services

H. Marine Resources Research and Development

I. Hydrology.

I. Mission and Operational Structure

As part of the Department of Commerce, NOAA is responsible for managing and conserving selected oceanic, coastal and atmospheric resources, and for applying managerial, research and technical expertise to provide practical environmental services and essential scientific information. Our missions are derived from over one hundred separate statutory authorities.

Our operations are geographically diversified. They require ships, satellites, aircraft, and buoys, as well as modern, complex computer and communication systems. The service organizations of NOAA have a long tradition of providing quality information to our nation and its citizens.

NOAA was established in the Department of Commerce in 1970, but this tradition was developed in agencies such as Coast and Geodetic Survey and the Weather Bureau that date back more than 150 years to the time of President Jefferson.

NOAA's primary operational programs are organized into five major line components (MLCs), each headed by an Assistant Administrator.

The National Marine Fisheries Service:

- Manages and conserves fishery resources within 200 miles of the U.S. coast
- Protects vital habitats of living marine resources including marine mammals, such as whales, and other endangered species, such as turtles
- Assists the support of the U.S. fishing industry
- Conducts research to support these missions

The major offices within the National Marine Fisheries Service are:

- Utilization and Development
- Resource Conservation and Management
- International Fisheries Affairs
- Science and Environment
- Marine Mammals and Endangered Species
- Habitat Protection

The proposed FY 82 budget for Fisheries is $124.4 million and 1,710 Full-Time Personnel (FTP)

The Office of Coastal Zone Management:

- Establishes national policies for use and protection of coastal areas
- Has provided funds to states to develop and carry out comprehensive state programs to manage coastal resources and to protect wetlands and beaches
- Protects unique estuarine and coastal areas through grants to purchase coastal areas and through designations of areas as estuarine or marine sanctuaries
- Seeks to harmonize Federal decisions affecting coastal areas in order to minimize conflicts among coastal users

The major offices within the Office of Coastal Zone Management are:

- Coastal Zone Management Programs
- Coastal Energy Impact Programs
- Sanctuary Programs
- Ocean Resource Coordination and Assessment

The proposed FY 82 budget for Coastal Zone Management is $8.9 million and 46 FTP.

The Office of Oceanic and Atmospheric Services:

- Reports and forecasts the weather, including warnings of hurricanes, tornadoes and other severe weather events
- Manages a major portion of the Federal Government's oceanographic fleet
- Prepares nautical and aeronautical charts and other navigational aids
- Operates the largest environmental data storage and retrieval system in the world
- Develops and maintains ocean technology for NOAA components

The major program elements within the Office of Oceanic and Atmospheric Services are:

- National Weather Service (4798/$261.7M)
- National Ocean Survey (1813/$95.7M)
- Environmental Data and Information Service (579/$24.7M)
- Ocean Technology and Engineering Services (107/$15.9M)

The proposed FY 82 budget for Oceanic and Atmospheric Services is $398.0 million and 7,339 FTP.

The Office of Research and Development:

- Conducts environmental research in NOAA laboratories and through universities to support research needs in such areas as ocean pollution, climate and weather forecasting and modification
- Through the Sea Grant Program, has provided grants to universities to develop and operate programs of marine research, education, and advisory services
- Coordinates and directs major multi-agency international research programs such as the Global Atmospheric Research Program
- Coordinates NOAA activities engaged in marine pollution assessment

The major program elements within the Office of Research and Development are:

- Office of Sea Grant
- Environmental Research Laboratories
- Marine Pollution Assessment Office

The proposed FY 82 budget for the Office of Research and Development is $88.1 million and 973 FTP

The Office of Satellites:

- Manages the Nation's operational meteorological satellite program to assist weather forecasting
- Plans for transfer of the Landsat System to NOAA.

The major offices within the National Earth Satellite Service are:

- Operations
- Systems Integration
- System Engingeering
- Research

The proposed FY 82 budget for the National Earth Satellite Service is $126.3 million and 609 FTP.

NOAA recently proposed the establishment of an Office of Ocean Minerals and Energy in the Office of the Administrator to implement new statutory responsibilities for the regulation of deep seabed mining and ocean thermal energy conversion systems. Its proposed FY 82 budget is $1.4 million and 10 FTP.

NOAA is also assigned more general responsibility to coordinate the science and services programs of Federal agencies relating to the oceans and atmosphere. Under the

umbrella of the Federal Coordinating Council for Science, Engineering, and Technology (FCCSET), the NOAA Administrator serves as Chairman of the Committee on Atmosphere and Oceans (CAO). CAO has sponsored various activities which have improved the cooperation among Federal agencies in such areas as ocean engineering, solar-terrestrial physics, and middle atmospheric research. CAO subcommittees have also prepared long-range Federal plans for weather modification research and aquaculture. A CAO Council now reviews the utilization of the entire Federal fleet of oceanographic vessels. Through a separate Federal Coordinator for Meteorological Services and Supporting Research, NOAA provides leadership in organizing joint action among all Federal weather service programs.

NOAA also has the responsibility to coordinate and develop 5-year plans for programs throughout the Federal Government with respect to ocean pollution and climate. The National Marine Pollution Program Office and the National Climate Program Office, within the Office of Policy and Planning, have these responsibilities. The Office of Policy and Planning is headed by an Assistant Administrator.

NOAA maintains offices of Management and Budget, General Counsel, Policy and Planning, Congressional Affairs, Public Affairs, Civil Rights, and a uniformed NOAA Corps to

support agency programs. The Office of Management and Budget is headed by an Assistant Administrator.

II. Personnel and Budget Overview

To understand the programs this Subcommittee is interested in, I believe it useful for me to have reviewed NOAA's full range of activities. I believe it would be similarly useful for you to be aware of NOAA's overall budget request for FY 82 and its significant programmatic implications.

A. Budget

The FY 1982 budget request proposes $800.0 million in new Budget Authority to fund essential ongoing program activities and limited program expansions in high priority areas. The FY 1982 request represents a 4.4% decrease from the $835.5 million estimated to be available to NOAA in FY 1981. The FY 1982 request is 23.9% ($250.8M) below the amount requested in the January budget submission. The significant program reductions and terminations proposed in the FY 1982 budget include:

- Reduction in proposed funding for the operational LANDSAT program ($121.7M) and deletion of the National Oceanic Satellite System (NOSS) ($16.0M); including a proposed rescission in FY 1981 of currently available NOSS funds ($6.0M);

- Termination of the Coastal Energy Impact Program (CEIP) including the proposed rescission in FY 1981 of currently available, but unobligated funds ($40.0M);

- Termination of the Coastal Zone Management (CZM) section 306 state grant program ($37.0M) and energy impact formula grant program ($7.2M);

- Termination of the Sea Grant college program ($37.0M);

- Reduced funding in FY 1982 for fisheries development grants provided through the Saltonstall/Kennedy (S/K) fund ($10.0M) including a similar proposed reduction ($5.0M) in FY 1981;

- Reduced funding for various fisheries program activities including state and anadromous fisheries grants ($7.0M), fisheries trade enhancement ($1.1M), and aquaculture research and development ($2.0M);

- Deactivation of three ships from the NOAA fleet: the SURVEYOR ($2.1M), OCEANOGRAPHER ($2.0M), and KELEZ ($.6M); and reduction in associated maintenance costs ($1.7M);

- Closing 38 part-time Weather Service Offices ($1.9M) and converting 8 Weather Service Forecast Offices to a reduced status ($.8M);

- Elimination of proposed funding for expansion of the undersea research program ($1.4M);

- Elimination of proposed funding for intergovernmental climate activities ($.5M) and reduced funding for the expansion of the climate data base ($.5M); and

- Rescission of a portion of currently available funds ($9.0M) for construction of an education center and a reception center at the Sand Point NOAA operations facility now under construction in Seattle, Washington.

Program increases included in the FY 1982 budget are:

- Funding to improve weather forecast and warning capabilities through deployment of the new AFOS communications network ($7.0M), development of a next generation of weather radar ($4.1M), and procurement and installation of improved automated surface observation demonstration systems ($2.0M);

- Funding to augment the NOAA mid-life fleet rehabilitation program ($1.5M);
- Funding to begin development of a basic users climatological data base ($.5M);
- Funding for development of improved socio-economic and harvesting data to support improved Fisheries Management Plans ($2.0M);
- Funding to support research efforts on the acid rain phenomenon ($1.9M) and studies of ice crystal formation and distribution ($1.1M); and
- Funding for procurement of a new computer system to support the Environmental Research Laboratories ($3.0M) and for continued procurement of the NOAA Central Computing Facility IBM 360/195 computers ($1.5M).

B. Personnel

The FY 1982 budget establishes a full-time permanent employment ceiling of 12,247 for FY 1981 and 11,930 for FY 1982. These new ceilings represent a 3.6% (453 FTP) and 6.1% (770 FTP) decrease respectively from the FY 1981 and 1982 ceilings reflected in the January budget submitted to Congress. These personnel reductions will need to be achieved through a combination of attrition, retirements,

voluntary reassignments, and where necessary, reductions-in-force. Personnel reductions will occur in all major program areas with a larger proportion occurring in headquarters and overhead activities.

III. Selected Science and Services Goals and Activities

NOAA conducts research and development activities in all of its major program areas; including program areas over which this Subcommittee does not exercise jurisdiction. As reported in the Special Analysis on Federal research and development, provided as part of the President's budget, NOAA's total R&D budget for FY 81 amounts to $217.4M and is proposed to be $184.2M in FY 82.

Today, I would like to address a combination of both R&D and selected service program activities which fall within the auspices of this Subcommittee. Together these activities form a large portion of the core of NOAA's programs. In total the program areas which I will address amount to $374.4M.

Most of NOAA's science and services activities are carried out by (a) the Office of Oceanic and Atmospheric Services primarily by the National Weather Service and to a

lesser degree by the National Ocean Survey and the Environmental Data and Information Service and (b) the Office of Research and Development through the Environmental Research Laboratories, Office of Sea Grant, and Office of Marine Pollution Assessment.

A. Weather Observation and Prediction

These programs provide the basic weather services to the Nation and supporting research to improve our abilities to monitor, predict, and warn about weather phenomena. They include a basic observational network composed of land surface observation, upper air observational facilities, radar, and display of satellite data; a basic communication system for collecting observations and disseminating forecast products; a major computer facility that provides forecast guidance to all of the field forecast offices in the country; and a system of laboratories which study hazardous phenomena such as severe thunderstorms, tornadoes, and hurricanes and develop techniques for the remote sensing of the atmosphere and improvements in numerical weather predictions.

The basic forecast and warning element is provided through a network of nearly 300 field offices which prepare and disseminate forecasts and severe weather warnings to the public and industry. These offices also provide forecasts

and warnings for aviation, agriculture, and forestry. Two specialized centers are responsible for providing forecasts of hurricanes, tornadoes, and other severe weather.

The FY 82 request for weather observation and prediction is $265.5M. This request reflects increases for continuation of the program to automate surface observation ($2.0M, a decrease of $1.0M from the January budget request); continuation of Next Generation Radar ($4.05M, a decrease of $1.0M from the January budget request); implementation of the Automation of Field Operations and Services ($7.0M); and continuation of procurement of a replacement computer system at the National Meterological Center ($1.5M). These increases all relate to overcoming technical deficiencies that exist in this activity and total $14.550M. NOAA's request also includes an increase of $3.0 million to initiate procurement of a computer system to meet the research needs of our laboratories.

In addition to the requested increases, the budget proposes to achieve savings of $3.448M by a decrease in the January budget request in the following areas:

1. Close 38 part-time weather service offices and reduce the staff at 8 forecast offices for a decrease of 125 positions and $2.689M. These

part-time WSOs have limited major network data acquisition responsibilities for upper air and weather radar observations. Their county forecast and warning responsibility will be reassigned to adjacent offices. Where offices to be closed operate NOAA Weather Radio transmitters, it may be possible in some cases to operate these transmitters remotely from nearby offices. For those forecast offices planned for staff reduction, aviation, marine, and agricultural forecast services will be provided by adjacent full-service WSFOS. State and regional forecast guidance will continue to be prepared at these eight WSFOs and supplied to those WSOs currently in their area of responsibility.

2. Reduce support to FAA and aviation by $350K and decreasing 18 positions. The general aviation pilots' minimal requirements for aviation weather preflight information will be met through a new automated, more general, area forecast. In addition, the aviation forecast staff at the National Meteorological Center will be reorganized and augmented to assume the responsibility for providing, from a centralized location, some National aviation weather information.

3. Discontinue the Fruit Frost Warning Program, saving $409K and eliminating eight positions. The citrus industry will be able to use the routine general area forecasts issued by the National Weather Service for minimum temperature information and forecasts. They will need to contract with private meterological services for specialized temperature and fruit-frost warnings.

B. Weather Modification

NOAA's weather modification program is aimed primarily at researching technologies for practical weather modification. Studies underway include the modification of clouds to increase rainfall. The objective of the program for modification of convective clouds is to develop a technology that ultimately can be used operationally by state and local agencies to augment water supplies and benefit agriculture. Major field experiments have shown localized increases in precipitation of up to 50% due to cloud seeding (including cloud growth through cloud mergers), and also area-wide increases. Experiments to confirm the effectiveness of the seeding have been conducted for 3 summers, ending in FY 1980. Data analyses of these studies will be completed in FY 1981. A model simulating the response of clouds to

seeding has been developed and awaits further testing. Specific cloud studies are being conducted in the Midwest to explore the feasibility of augmenting summer rainfall in the corn and soybean belts.

The FY 1982 request for our weather modification programs is $6.1 million. The request includes an increase of $1.1 million and 3 people to study the role of ice crystals in the life cycle of clouds.

The ice crystal studies are necessary to develop a working understanding of the initiation, characteristics, behavior and distribution of the ice particles which form the nuclei of much of the precipitation that occurs in mid-latitude regions of the earth. There is general consensus that the present lack of understanding of this process is the single most important impediment to progress in successful weather modification leading to increased water supplies. The studies will be a multi-year program of interactive laboratory, numerical modeling, and field experiment activities involving university and private research institutions in conjunction with on-going NOAA activities. The development of new remote sensing equipment and measurement techniques makes the commencement of the ice crystal studies particularly timely in FY 1982.

C. Air Quality

Research and development on air quality is oriented toward understanding and predicting the influence of human activity on the quality of the atmosphere. Activities in this area include monitoring the global concentration of carbon dioxide and ozone, and predicting the trajectories of contaminated air masses, including radioactive debris. In addition, studies are being conducted on the physical processes involved in the transport, diffusion, transformation and deposition of air pollutants and in particular acidic chemicals which cause acid precipitation.

NOAA has provided meteorological data, forecasts warnings, and advisories to support Federal, State and local programs in the management and control of air pollution and air quality. Most of these services have been performed on a reimbursable basis for other Federal agencies and in FY 81 NOAA is phasing out some of the program in order to achieve mandated personnel savings. Areas with the greatest air pollution potential and other Federal agencies needing such services can contract for private meteorological services to advise the public of air pollution conditions.

The FY 1982 request for our programs in air quality total $5.8 million. This request includes an increase of $1.9 million and 2 people to support research on acid precipitation.

Many questions about acid precipitation cannot be answered at this time. It is clear that human activities release many millions of tons of pre-acidic materials such as oxides of nitrogen and sulfur. However, there are some major uncertainties about atmospheric processes, including the transport, transformation and removal of acidic and pre-acidic materials in the atmosphere, and the role and contribution of natural sources of acidic and pre-acidic materials. The National Acid Precipitation Assessment Plan prepared by the Interagency Task Force on Acid Precipitation, which is co-chaired by NOAA, EPA and the Department of Agriculture, assigns NOAA lead responsibility for studying atmospheric processes related to acid rain and natural sources that produce such precipitation. This initiative is responsive to that responsibility. As the United States considers energy programs which may increase the amount of pre-acidic material emitted to the air, it will become even more important to provide a scientific foundation for decisions on actions designed to control or mitigate harmful effects caused by acid precipitation.

D. Climate Program

NOAA's goals in the area of climate research and services include climate data management and information services, monthly and seasonal predictions, impact assessments, and research and monitoring.

- Climate data management includes continuous quality review, computer processing, and inventorying of large numbers of conventional surface, upper air, and marine weather observations along with satellite-measured parameters -- for conversion into specialized forms of information for wide use.

- Predictions of climate fluctuations are state-of-the-art monthly and seasonal outlooks for average temperature or total precipitation.

- Impact assessments quantify effects of climate fluctuations on fisheries, crop yields, energy demands, and water resources.

- The research focuses on dynamic modeling, simulation, and diagnosis of the global climate system, as well as on ocean climate and on the earth radiation budget as derived from satellite data.

- Monitoring is accomplished with the aid of special measurements at remote "clean air" observatories along with the more regular, widespread array of meterological and oceanographic measurements made by surface observers, radiosondes, aircraft, and satellites.

The National Climate Program Office, (NCPO), located in NOAA, is the lead entity for coordinating the National Climate Program. The NCPO prepares the National Climate Plan, coordinates the Federal agency programs concerning climate, and conducts specific programs called for in the Climate Act. Budget requests for NOAA climate activities in Fiscal Year 82 total about $25.2 million, which does not include some climate related activities of the National Marine Fisheries Service and the National Earth Satellite Service.

Changes for Fiscal year 1982 for the direct NOAA programs are limited to the climate data management and information services area. A proposed increase of approximately $0.2 million results from (a) an increase of $0.5 million to establish a basic users climatological data base, and (b) a decrease of $0.3 million associated with proposed discontinuation of selected climatic publications.

NOAA proposes that the National Climate Program Office budget authority be continued at its present level of about $1.0 million. At this level, the NCPO will continue to operate the one Experimental Climate Forecast Center which is to be established in FY 81. It will continue the State-Federal cooperative demonstration studies at the FY 81 level of $200K.

E. Marine Observation and Prediction

A major goal of NOAA is to provide marine observation and prediction services in support of the Nation's growing use of our coastal, offshore, and oceanic areas. These services to coastal residents, recreational boaters, fishermen, and our offshore industries provide necessary information related to safety of life and property. This activity is composed of a basic marine observation network in support of our forecast and warning services, a marine weather and ocean prediction capability, a national oceanographic data center, and a supporting program of research and development.

The basic marine observation network includes measurements from specially equipped navigational buoys, cooperative merchant ships, and automated coastal and offshore observing stations. The National Oceanographic Data Center makes most of these observational data available to government agencies, industry, and the general public on either an exchange or reimbursable basis. Marine weather and ocean forecasts are provided by Weather Service forecast offices along the coast and in the Great Lakes area. This service also includes tsunami warning centers for the Pacific Ocean area and Alaska. An important aspect of this activity is the research and development of new techniques for forecast and warning of hazardous marine conditions such as storm surge, waves, sea and lake ice, and high winds.

The total FY 82 budget request for programs in this activity is $18.4M. This represents a decrease of $1.6M from the proposed January budget request as a result of the proposal to eliminate the Sea Grant Program.

F. Marine Pollution Assessment

NOAA's Marine Pollution Assessment program seeks to improve understanding of the environmental processes, principally in marine coastal regions, that determine how contaminants (1) enter the marine waters; (2) affect the ecosystem and (3) vary in concentration over time. This information is needed by resources managers, planners and regulatory agencies to assure a healthy marine ecosystem and to protect the public health.

This program includes dumpsite investigations and supporting laboratory research to determine the consequences of ocean dumping of dredged material and municipal and industrial wastes and regional studies in selected coastal regions including the New York Bight, Puget Sound, Gulf of Mexico, and the Great Lakes. The regional studies will improve our understanding of the dynamics of these ecosystems and enhance our ability to predict the effects of pollutants and other man-induced changes on them.

NOAA's program also includes its responsibilities as part of the National Response Team to provide scientific

support to the Coast Guard in the event of spills of oil or other hazardous materials in coastal waters, and to assess the damage from spills of hazardous materials.

The National Ocean Pollution Planning Act of 1978 (Pub. L. No. 95-273) gives NOAA lead responsibility within the Federal Government for developing biennially the 5-year Federal Plan for ocean pollution research, development, and monitoring. Working with ten other concerned agencies and departments, NOAA prepared the first Plan in the fall of 1979; the updated Plan will be issued in September 1981. The National Marine Pollution Program Office, within NOAA's Office of Policy and Planning, provides the focal point within NOAA for interagency planning and coordination. Financial support is provided for ocean pollution research, development, and monitoring projects that address national priorities identified in the 5-year Federal Plan but are not being adequately addressed by any Federal agency or department.

The FY 1982 budget request for Marine Pollution Assessment activities is $17.8 million. This represents a decrease of $4.5M from the proposed January budget request as a result of the proposal to eliminate the Sea Grant Program.

G. Solar Terrestrial Research and Services

The goal of this program is to promote the efficient, safe, and economic utilization of the upper atmosphere and space for civilian and military activities, vehicular operations, and telecommunications; the effective operation of essential public services without disruption caused by magnetic storms or other solar or upper atmospheric events; the discovery and understanding of additional solar terrestrial relationships to enable us to predict and take actions to minimize adverse environmental and economic impacts; and a better understanding of the chemical, dynamic, and radiative properties of the upper atmosphere and their relation to human activities.

NOAA operates the Space Environment Services Center jointly with the United States Air Force (USAF) Air Weather Service and is both the national and international focal point for operational space and upper atmosphere information. The Center maintains a real-time data base from which government agencies, industries, universities, foreign governments, and other foreign and domestic users may obtain current information on the state of the sun, the interplanetary medium and the near-earth space environment. It also provides these users with forecasts and warnings of sudden solar disturbances and their effects on their activities. In addition to the services program, research is conducted

at the Space Environment Laboratory to understand and model the fundamental physical processes responsible for the observed energy release in the forms of electromagnetic variations and charged particles.

NOAA's Solar Terrestrial program also includes research at the Aeronomy Laboratory to measure, understand and model the physical, chemical and dynamic processes of the stratosphere and higher layers of the upper atmosphere. Concurrent with this work is the development of new measurement techniques for observing these processes.

NOAA's National Geophysical and Solar Terrestrial Data Center provides comprehensive services in the collection, archival, and analysis of solar-terrestrial physics data in the near-earth space environment, the ionosphere and upper atmosphere, and the terrestrial geomagnetic field. NOAA is phasing out its program related to Solar Terrestrial Data during FY 81. Industrial users (electrical power systems, communications, and petroleum and mineral prospecting firms, for example) will be able to shift their requirements to specialized consulting firms. Defense agencies will have to obtain the functions they require by increasing support for these capabilities within the Department of Defense. Responsibilities of the Data Center under international data archiving and exchange agreements can be renegotiated.

The FY 82 request for solar terrestrial research and services is $6.9 million.

H. Marine Resources Research and Development

NOAA's program in marine resource research and development is intended (1) to accelerate marine industrial development through research into the optimum use, development, and protection of living and mineral marine resources; and (2) to improve, through applied research, the technologies needed for the efficient use of marine resources.

In support of this program NOAA conducts an Undersea Research Program consisting of regional facilities to provide the scientific community with the oportunity to conduct research in different underwater environments. NOAA currently funds the Caribbean Research Hydrolab Program which is managed under a grant by Fairleigh Dickinson University.

In addition to the regional programs, NOAA fulfills its marine science requirements by supporting ALVIN (a deep sea submersible funded jointly by the National Science Foundation, the U.S. Navy and NOAA) and by leasing other submersibles. Because NOAA is the largest civilian diving agency in the Government, research in diver physiology and underwater medicine studies for safer and more effective undersea research is conducted.

For FY 1982, NOAA requests $5.6 million for conducting marine resources research. This represents a decrease of 20 positions and $17.2 million from the proposed January budget request as a result of the decision to eliminate the Sea Grant program. In addition, the FY 1982 budget does not include enhanced funding of $1.4 million for planned regional underwater facilities as proposed in the January request. This action will result in deferral of the planned regional facility in Southern California, and the proposed program expansions for the South Eastern Consortium for Underwater Research (SECURE) and the program at the University of Hawaii.

I. Hydrology

NOAA's goal in providing hydrological services is to minimize the loss of life and mitigate property damage from floods through an effective flood warning program and to support Federal, regional and state water management activities by providing river and water supply forecasts. A nationwide system of flash flood watches and warnings, based on constant monitoring of river and weather conditions using radar and automated data collection networks, serves to alert communities of potential dangers. To provide these services, the weather service forecast field structure is supplemented by 13 River Forecast Centers.

The base program for this activity consists of $15.1M. There are no proposed changes in the FY 82 budget request for this activity.

III. Conclusion

It is my hope that I have explained to you how the activities under the jurisdiction of your Subcommittee relate to NOAA's broader goals, and that you will support authorization of our programs at the levels requested by the President.

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